Spontaneous Fundal Uterine Rupture Sparing Cesarean Scar at 32 weeks of Gestation: A Case Report and Review of Literature

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Abstract
Introduction: Uterine rupture is a catastrophic emergency in obstetrics requiring immediate surgical intervention to improve maternal outcome. Fetal outcomes are almost poor even if it is still alive and the case was presenting very early after uterine rupture. Usually uterus ruptures at the lower segment (weakest part) if there is no history of uterine surgery. Fundal rupture usually occurs after previous classic cesarean delivery or previous uterine surgery.

Case Report: A 27 years old patient G3P1+1, 32 weeks of gestation presented with hypovolemic shock. History and ultrasound raise suspicion of uterine rupture. Exploration revealed hemoperitoneum and fundal uterine rupture about 10 cm which was repaired and bilateral tubal ligation was done and patient was discharged after 5 days. The positive history of previous curettage supports the finding of fundal rupture with intact cesarean scar.

Conclusion: Uterine rupture should be suspected in patient presenting with abdominal pains during pregnancy in presence of uterine scar. The history of uterine curettage raises the suspicion of uterine rupture.

Keywords: Spontaneous, Fundal Uterine Rupture, Cesarean Scar, Third trimester.

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Introduction
Rupture uterus is rare, but it is one of the most serious preventable obstetrical emergencies which could lead to grave sequelae for both mother and baby with perinatal mortality of 80–95%.(1)

Rupture uterus is commonly seen in women who have a past history of previous uterine operation leaving uterine scar.(2) The risk of uterine rupture is associated with uterine scars caused by previous cesarean section, myomectomy, hysteroscopic procedures, and curettage.(3)

Case Presentation
A 27 years old patient G3P1+1 came to emergency unit of Obstetrics and Gynecology Department, Tanta University, Egypt in a shock state; Pulse 123 beat/minute, Blood pressure was 80/50 and in air hunger state. Immediate resuscitation was done by wide pore cannulas, IV fluids, immediate investigations, and cross matched blood was requested. On fixation of a catheter urine volume was 30 ml only.

The patient history was reviewed immediately which revealed that she was pregnant at 32 weeks of gestation in a singleton baby after a previous cesarean delivery 6 years ago and previous curettage for missed abortion 2 years before the current pregnancy. Pregnancy course was smooth all over the first 2 trimesters.

Sudden onset abdominal pain, dull aching around the umbilicus was felt followed by syncope and severe pallor. Patient was examined vaginally where the cervix was closed and no bleeding was observed. Ultrasound revealed fetal death and marked intraperitoneal free fluid which on aspiration revealed blood.

Immediate shift of the patient to operation room and exploration was done through Pfannenstiel incision. At that time investigations revealed hemoglobin 6 g/dL, creatinine was 1.1 other investigations were within normal. After incision, large amounts of intraperitoneal hemorrhage mixed with amniotic fluid was found and suctioned out about 1800 ml, baby was extracted from abdomen dead. The uterus was then exteriorized, we were expecting uterine rupture at the cesarean section scar, but the surprising issue that we found uterine rupture at the fundus about 10 cm Fig. 1 and the cesarean scar was spared and intact. Fig. 2

After counseling of patient’s relatives, husband and consultation of higher staff members of the Department the decision was to repair the uterine fundus with bilateral tubal ligation to prevent this catastrophic scenario to be repeated. Intraperitoneal drain was fixed and the abdomen was closed in layers.

Replacement of blood was done intraoperatively and in the postoperative period, complete investigations were also requested, follow up was conducted in an ordinary ward, and there was no need for ICU. The patient was doing well after 5 days except for the psychic trauma from the case scenario and was discharged in the following condition; Pulse 88 beat/minute, Blood pressure 110/75, Hemoglobin was 10.4 g/dL. The patient was given a card with all operative data and the schedule for follow up.
Our explanation for this case was proposed that perforation of the fundus had occurred during curettage and passed unnoticed. That perforation healed by secondary intention yielding a weak scar in the fundus making a weak point in the uterus unable to withstand progressive stretching as pregnancy advances leading to rupture at the fundus and spared cesarean section scar.

**Fig. 1: Fundal rupture at 32 weeks gestation**

**Discussion and Literature Review**

Uterine rupture could occur in scared uterus with previous history of uterine surgery (previous cesarean, myomectomy, hysteroscopy) or occur in non-scared with remote history of unrecognized uterine perforation, thermal injury, and obstructed labor.

Spontaneous uterine rupture may occur before or after labor onset, at term or preterm, and with or without non-reassuring fetal heart rate patterns. (4)

Uterine rupture also may occur in a subsequent pregnancy after unrecognized perforation during entry of the hysteroscope. So, when this occurs, it is important that the surgeon explains to the patient the hazard of uterine rupture in the subsequent pregnancy and to document this discussion in the medical records. (2)

Rupture uterus increases after induction of labour or trial of labour in a scared uterus leading to rupture through the site of scar. (5)

Searching of the literature in the last 10 years (2007 – 2017) for reported cases of fundal rupture in third trimester revealed the following research results:

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Patient age</th>
<th>Obstetric history</th>
<th>GA at rupture</th>
<th>Size of rupture</th>
<th>Previous uterine surgery</th>
<th>Diagnosis</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nkwabong E et al</td>
<td>2007</td>
<td>35 years</td>
<td>G7P4</td>
<td>34 weeks</td>
<td>7 cm</td>
<td>2 uterine curettages</td>
<td>Ultrasound</td>
<td>Repair in 2 layers + bilateral tubal ligation</td>
</tr>
<tr>
<td>Rana R et al</td>
<td>2009</td>
<td>26 years</td>
<td>G3P2</td>
<td>32 weeks</td>
<td>7.5 cm</td>
<td>Not relevant</td>
<td>Clinical + Ultrasound</td>
<td>Repair of the uterus in double layer + bilateral tubal ligation</td>
</tr>
<tr>
<td>Nikolaou M et al</td>
<td>2012</td>
<td>33 years</td>
<td>G1P0</td>
<td>28 weeks</td>
<td>4.5 x 4 cm</td>
<td>Not relevant</td>
<td>Clinical + ultrasound</td>
<td>Subtotal hysterectomy</td>
</tr>
<tr>
<td>Mishra M et al</td>
<td>2013</td>
<td>35 years</td>
<td>G3P1+1</td>
<td>34 weeks</td>
<td>Not mentioned</td>
<td>One D/C operation 12 years back</td>
<td>missed</td>
<td>Subtotal hysterectomy</td>
</tr>
<tr>
<td>Kim YR et al</td>
<td>2014</td>
<td>30 years</td>
<td>G1P0</td>
<td>32 weeks+2days</td>
<td>Corneal Size not mentioned</td>
<td>Laparoscopic cornual resection</td>
<td>Ultrasound</td>
<td>Repair of the defect</td>
</tr>
<tr>
<td>Sheybani S et al</td>
<td>2014</td>
<td>Not stated</td>
<td>G3L2</td>
<td>28th weeks</td>
<td>10 cm</td>
<td>Not relevant</td>
<td>Misdagnosed as abruption</td>
<td>Repair in 2 layers + double tubal ligation</td>
</tr>
<tr>
<td>Authors</td>
<td>Year</td>
<td>Age</td>
<td>Gestation</td>
<td>Duration</td>
<td>Size of Uterine</td>
<td>Nature of Uterine</td>
<td>Repair</td>
<td></td>
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<tr>
<td>Mizutamari E et al(1)</td>
<td>2014</td>
<td>29</td>
<td>32 weeks</td>
<td>2 cm</td>
<td>Not relevant</td>
<td>Clinical+ MRI</td>
<td>Repair of cornu</td>
<td></td>
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<tr>
<td>Djaković I et al(1)</td>
<td>2015</td>
<td>40</td>
<td>31 weeks</td>
<td>Not mentioned</td>
<td>Laparoscopic myomectomy</td>
<td>Clinical+ Ultrasound</td>
<td>Repair in 2 layers</td>
<td></td>
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<tr>
<td>Metin K et al(2)</td>
<td>2016</td>
<td>33</td>
<td>32 weeks</td>
<td>10 cm</td>
<td>Not relevant</td>
<td>Mislaid as abortion</td>
<td>Repair in 2 layers</td>
<td></td>
</tr>
<tr>
<td>Benoit RM et al(3)</td>
<td>2016</td>
<td>29</td>
<td>32 weeks</td>
<td>Not mentioned</td>
<td>D&amp;C 2 weeks postpartum</td>
<td>Clinical+ Ultrasound+CT</td>
<td>Hysterectomy</td>
<td></td>
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<tr>
<td>Abbas A et al(2)</td>
<td>2017</td>
<td>32</td>
<td>33 weeks</td>
<td>7x7 cm</td>
<td>Hysteroscopic resection of submucous myoma</td>
<td>Clinical+ Ultrasound</td>
<td>Repair in 3 layers</td>
<td></td>
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</tbody>
</table>

Review of literature revealed that all previously mentioned cases had uterine rupture at the fundus or cornu in the third trimester either the patients had previous uterine surgery(2,3,9) or patients had history of uterine curettage(1,6,13) or the patients had no relevant history of any uterine surgery.(7,8,10,11,12)

History of uterine curettage may cause rupture in the lower uterine segment where perforation was suspected in that case.(14)

Most cases were diagnosed clinically and with ultrasound and CT or MRI(2,3,6,7,8,9,11,13) or diagnosis was missed in some cases(1) or misdiagnosed as placental abruption.(10,12)

In most cases repair of fundus was done without tubal ligation(2,3,9,11,12) or repair with tubal ligation as done in our case(6,7,10) or hysterectomy was done.(1,8,13)

To our knowledge, one case of uterine fundal rupture sparing cesarean section scar that case had 2 previous cesarean sections similar to our case.(12) The cause of rupture was preterm labour.

**Conclusion**

Uterine rupture -although rare- should be put in mind in patient presenting with abdominal pains in the third trimester whether patient has uterine scar or not. The history of uterine curettage should raise the suspicion of rupture as perforation may occur and pass unnoticed leading to weak point in the uterus that could not withstand stretching of growing baby.

**References**